

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOSHIBA CORPORATION,
Petitioner,¹

v.

OPTICAL DEVICES, LLC,
Patent Owner.

Case IPR2014-01440
Patent RE42,913 E

Before ERICA A. FRANKLIN, GLENN J. PERRY, and JAMES B. ARPIN,
Administrative Patent Judges.

PERRY, *Administrative Patent Judge.*

DECISION
Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.108

¹ The Notice of Filing Date Accorded, Paper 3, mistakenly included Toshiba America Information Systems, Inc. as a Petitioner.

I. INTRODUCTION

A. Background

Toshiba Corporation (“Petitioner”) filed a Petition (Paper 1, “Pet.”) to institute an *inter partes* review of claims 48–53 of U.S. Patent No. RE42,913 E (Ex. 1001, “the ’913 patent”) pursuant to 35 U.S.C. §§ 311–319. Pet. 3. Optical Devices, LLC (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”).

We have jurisdiction under 35 U.S.C. § 314,² which provides that an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a).

Petitioner challenges the patentability of claims 48–53 of the ’913 patent as anticipated by Bailey.³ Petitioner’s challenge is supported by a Declaration executed by Lambertus Hesselink, Ph.D. (Ex. 1008).

For the reasons stated below, we determine that, on this record, Petitioner has not demonstrated a reasonable likelihood of prevailing in showing the unpatentability of any challenged claim. Accordingly, the Petition is denied.

B. Related Proceedings

Petitioner indicates that the ’913 patent is asserted in *Optical Devices, LLC v. Toshiba Corp.*, Case No. 1:13-cv-10530 (D. Del. 2013). The ’913

² See Section 6(a) of the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 116 Stat. 284, 300 (2011).

³ U.S. Patent 3,016,464 – Bailey, filed June 10, 1959, issued January 9, 1962 (“Bailey”).

patent is also the subject of an investigation before the U.S. International Trade Commission: *In the Matter of Certain Optical Disc Drives, Components Thereof, and Products Containing the Same*, Investigation No. 337-TA-897. Pet. 1.

Petitioner indicates that the '913 patent is related by common parent, to U.S. Patent No. RE40,927 ("the '927 patent") and to U.S. Patent RE43,681 No. ("the '681 patent") which are also asserted in the above identified lawsuits. *Id.*

Petitioner has filed other related petitions for *inter partes* review including IPR2014-01440 (the '913 patent), IPR2014-01441 (the '681 patent), IPR2014-01442 (the '681 patent), IPR2014-01443 (the '927 patent), IPR2014-01444 (the '927 patent), IPR2014-01445 (U.S. Patent No. 7,839,729 B2), IPR2014-01446 (U.S. Patent No. 7,196,979 B2), and IPR2014-01447 (U.S. Patent No. 8,416,651 B2). *Id.* at 2; *see* Paper 5, 1.

The '913 patent was the subject of IPR2014-00302 filed by a different petitioner (petition denied); and the subject of IPR2014-00303 filed by a different petitioner (petition granted). Pet. 2.

C. The '913 Patent

The '913 patent relates to detection of retroreflective optical systems. Ex. 1001, Abstract. Retroreflective optical systems are those in which incident rays (light or other radiant energy) and reflected rays are parallel for any angle of incidence within a field of view. Ex. 1001, 1:23–26. Retroreflective optical systems are found in many military surveillance systems including binoculars, telescopes, periscopes, range finders, cameras, and the like. *Id.* at 1:60–63. The application that eventually issued as the

'913 patent was filed on March 10, 1967, but remained subject to a secrecy order for many years because of its potential military use. Pet. 10.

Figure 1 of the '913 patent is reproduced below:

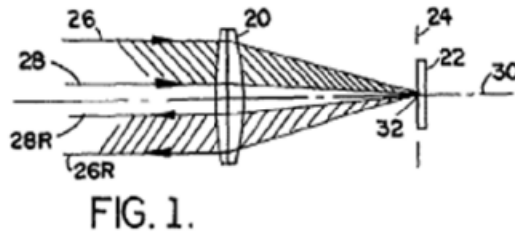


Figure 1 of the '913 patent explains retroreflection. It depicts an optical system including lens 20 and reflective surface 22 (e.g., a mirror) positioned in focal plane 24 of lens 20. Ex. 1001, 3:4–25. Radiation rays 26 and 28 are directed towards lens 20 of the optical system from a radiation (e.g., light) source (not shown). *Id.* at 3:14–16. For purposes of clarity, the '913 patent Figure 1 shows the *incident* rays at the top of lens 20 and the *reflected* rays at the bottom of lens 20. *Id.* at 3:11–14. Incident rays 26 and 28 are refracted by lens 20 and focused at focal point 32 on mirror 22. *Id.* at 3:14–16. The rays are reflected, such that the angle of reflection equals the angle of incidence, and the reflected rays are refracted again by lens 20 and emerge therefrom as retroreflected rays 26R and 28R. *Id.* at 3:21–25.

Retroreflected rays are in the form of a narrow, substantially collimated beam having a high radiant flux density. “It is to be noted that there is an actual increase in the radiant flux density of the retroreflected beam due to the narrowing thereof. This increase in radiant flux density is herein termed optical gain.” *Id.* at 4:6–10. “In order to obtain a measure of

the optical gain we must compare the retroreflector to a standard of reference.” *Id.* at 4:41–42.

Embodiments describe detecting a retroreflective system by comparing reflected energy with transmitted energy to distinguish energy that has been retroreflected from energy that has not been retroreflected. For example, an embodiment shown in Figure 6 illuminates a field of view with transmitted light. Reflected light is compared with the transmitted light to determine characteristics of the optical system being investigated. *Id.* at 5:45–6:7.

The '913 patent describes an embodiment that directs a laser for identifying and tracking an object based upon retroreflected radiant energy. *Id.* at 8:25–9:32. Figure 12 is reproduced below.

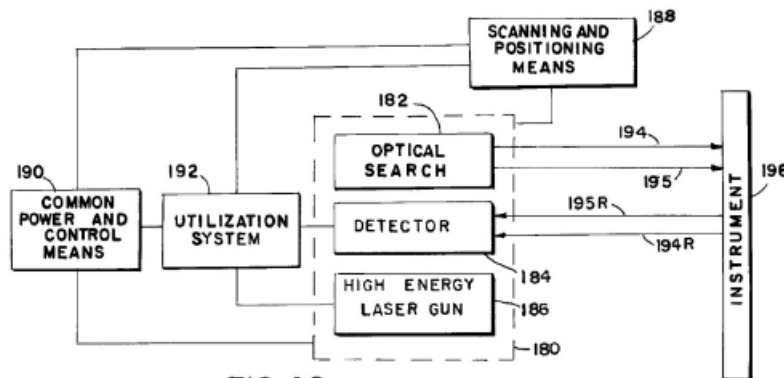


FIG. 12.

Figure 12 is a block diagram of an embodiment of a system for detecting the presence of an optical instrument, for tracking the instrument, and for neutralizing observers utilizing the instrument and/or rendering the instrument ineffective. Radiant energy is transmitted by optical search device 182 toward optical instrument 196 (e.g., an optical system including a lens and an object exhibiting some degree of reflectivity when disposed substantially in a focal plane of the lens). Retroreflected radiant energy is

detected by detector 184. The output of detector 184 is provided to utilization system 192 that controls scanning and positioning means 188 to track the location of the object *or* high energy laser gun 186 to direct laser gun 186 at the object by means of common power and control means 190. *Id.* at 8:30–40.

The '913 patent also describes, with the aid of Figure 13, an embodiment for identifying a radar system by scanning an area with a sweep of frequencies and noting retroreflection from a parabolic antenna. An attenuated frequency received from the scanning area indicates the presence of a resonant parabolic antenna system that absorbs the frequency appearing as attenuated. *Id.* at 9:33–65.

D. Illustrative Claim

Petitioner challenges claims 48–53 of the '913 patent. Claims 48 and 51 are independent. Claims 49 and 50 depend from claim 48. Claims 52 and 53 depend from claim 51. Claim 48 is illustrative and is reproduced below, with disputed terms emphasized:

48. A method of detecting characteristics of an object within an optical system, comprising:
transmitting energy at an object included in an optical system having retroreflective characteristics,
wherein the optical system includes a lens and the object includes a surface exhibiting some degree of reflectivity disposed substantially in a focal plane of the lens;
receiving reflected radiant energy with an *optical gain* after retroreflection of the radiant energy; and
detecting the reflected radiant energy after retroreflection to determine at least one characteristic of the object.

Ex. 1001, 14:21–31.

II. CLAIM CONSTRUCTION

Consistent with the statute and the legislative history of the AIA, we interpret claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent. 37 C.F.R.

§ 42.100(b); Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012). There is a presumption that claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the specification. *See In re Translogic Tech. Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An applicant may rebut that presumption by providing a definition of the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). In the absence of such a definition, limitations are not to be read from the specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

At least one of the parties proposes a specific construction for each of the following terms. Pet. 11–21; Prelim. Resp. 8–20.

A. “Focal Plane”

The panel that denied institution in the IPR2014-00302 (Ex. 1006) (“the 302 panel”) construed this term. Ex. 1006, 8. The parties agree that the term “focal plane” should be construed here, as it was construed by the 302 panel, to mean “a plane through the focus perpendicular to the axis of an optical element.” Pet. 13; Prelim. Resp. 10. We are persuaded that, for purposes of this decision, the 302 panel’s construction is the broadest reasonable construction consistent with the ordinary and customary meaning of the term and with the Specification of the ’913 patent and adopt it.

B. “Retroreflection”

The 302 panel construed this term in connection with the previous IPR proceeding. Ex. 1006, 8. The parties agree that this term should be construed here, as it was construed by the IPR panel, such that “retroreflection” means “reflection of an incident ray in a manner such that the reflected ray is parallel to the incident ray for any angle of incidence.” Pet. 13; Prelim. Resp. 11. However, Petitioner maintains that this construction is correct for any angle of incidence within the “field of view” of the retroreflector. See Pet. 13. For purposes of this decision, Patent Owner does not object to Petitioner’s proposed modification of the 302 panel’s construction of “retroreflection.” Prelim. Resp. 11. We are persuaded that, for purposes of this decision, the broadest reasonable construction of “retroreflection, consistent with the Specification of the ’681 patent, is “reflection of an incident ray in a manner such that the reflected ray is parallel to the incident ray for any angle of incidence within the field of view of the retroreflector.”

C. “Optical System”

The IPR panel construed this term in connection with the ’302 IPR proceeding. Ex. 1006, 9. The parties agree that this term should be construed here, as it was construed by the 302 panel, such that “optical system” means “a collection of optical elements including at least a lens and a reflective surface.” Pet. 14; Prelim. Resp. 11–12. The ’913 patent supports this construction. Ex. 1001, 2:41–59, 3:14–16, 5:40–43, 8:44–50; Figs. 1–4, 6–12.

We are persuaded, for purposes of this decision, that the '302 panel's construction also is the broadest reasonable construction consistent with the Specification of the '913 patent.

*D. “An Optical System Having Retroreflective Characteristics”
(claims 48–53)*

Petitioner and Patent Owner agree on the construction of “an optical system having retroreflective characteristics” as

an optical system as defined above having a focusing element and reflective surface that is located substantially in the focal plane of the focusing element, wherein the system is configured so that a ray incident on the focusing element and focused on the reflective surface is reflected along a path parallel to the incident ray for any angle of incidence.

Pet. 14–15; Prelim. Resp. 12–13. The agreed upon construction is supported by the '913 patent Specification. Ex. 1001, 2:41–59, 3:14–16, 5:40–43, 8:44–50; Figs. 1–4, 6–12.

We are persuaded, for purposes of this decision, that this construction is the broadest reasonable construction consistent with the Specification of the '913 patent and adopt it.

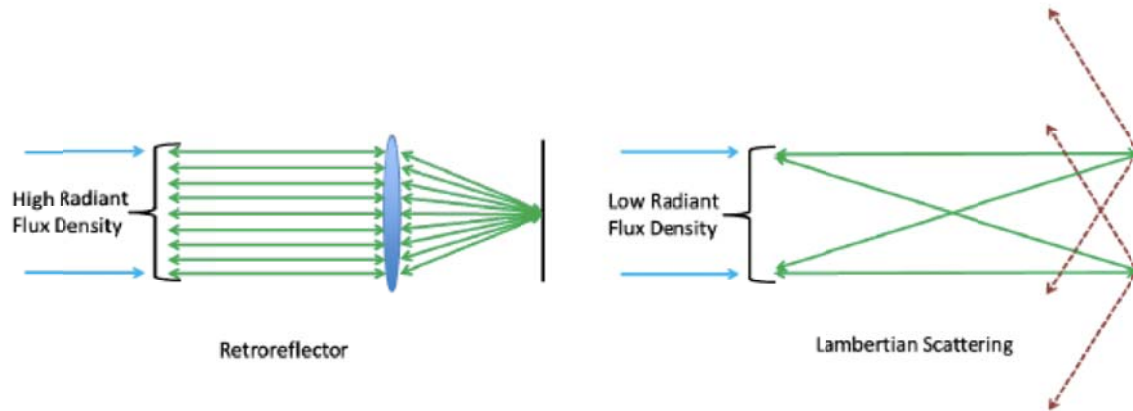
E. “Optical Gain” (in the context of a retroreflecting optical system)(claims 48–53)

In the context of a retroreflecting optical system, Petitioner would have us construe “optical gain” as “an actual increase in the radiant flux density of the retroreflected beam due to the narrowing thereof.” Pet. 15.

Petitioner argues that retroreflected light necessarily has the attribute of optical gain because the lens concentrates rays that would otherwise be reflected into a larger solid angle into a smaller one. Pet. 15–21. Petitioner

provides the following comparison figure at Petition page 20 and at Ex. 1008

¶ 46:



According to Petitioner, this comparison demonstrates that light that would otherwise be scattered into a wide angle (right side) is gathered into a smaller angle and collimated (left side) thereby increasing flux density of the reflected light. Pet. 20.

Patent Owner disagrees and would have us construe “optical gain” as “a change in radiant flux density of reflected radiant energy.” Prelim. Resp. 13–20.

Based on the record thus far (without the benefit of Patent Owner’s formal response) we accept that optical gain, in this context, is an inherent property of retroreflected light.

The description of embodiments in the ’913 patent rely on retroreflected optical gain in order to identify targets by comparing retroreflected light to light transmitted toward a potential target. The optical gain caused by the retroreflection permits such comparison.

We are persuaded that, for purposes of this decision, that Petitioner’s proposed construction is the broadest reasonable construction consistent with the Specification of the ’913 patent and adopt it.

III. ANALYSIS

Petitioner contends that claims 48–53 are anticipated by Bailey.
Pet. 4.

A. Overview

Petitioner argues that claims 48–53 of the '913 patent are anticipated by Ando. *See supra* Sec. I.A. “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987). On this record and for the reasons set forth below, we are persuaded that Petitioner demonstrates a reasonable likelihood of prevailing in the challenges to claims 48–53 of the '913 patent.

B. Bailey (Ex. 1007)

Bailey describes an apparatus for determining the location and thickness of a reflecting object. Ex. 1007, Title. Bailey's Figure 2 is reproduced below.

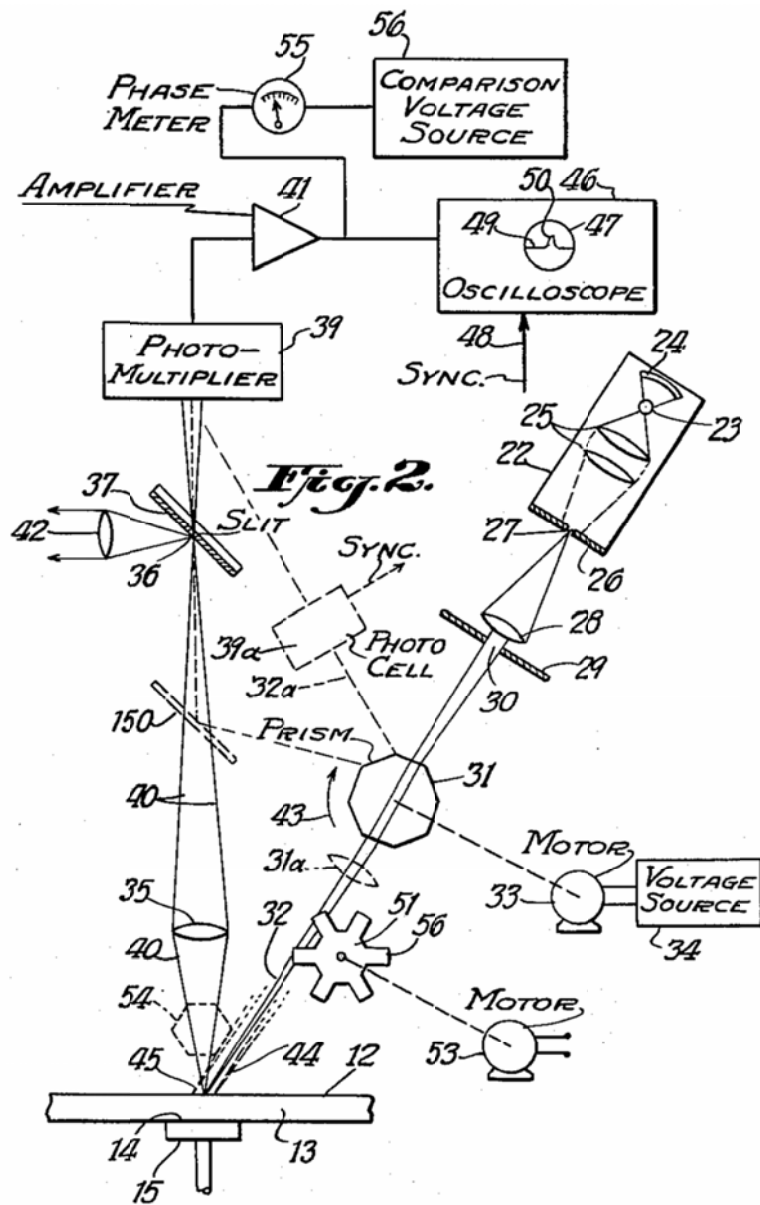


Figure 2 is a combined schematic and block diagram which illustrates the preferred embodiment of Bailey's invention. *Id.* at 2:40–42. Light from source 22, 23 is focused onto surface 12 by lens 28. *Id.* at 5:39–46. Surface 12 reflects some of the light impinging upon it. *See id.* at 6:38–39.

C. Anticipation challenge based on Bailey

Petitioner provides a detailed read of the challenged claims on Bailey

using claim charts at Petition pages 22–38. In particular, regarding independent claims 48 and 51, Petitioner refers to Bailey’s Figure 3, reproduced below.

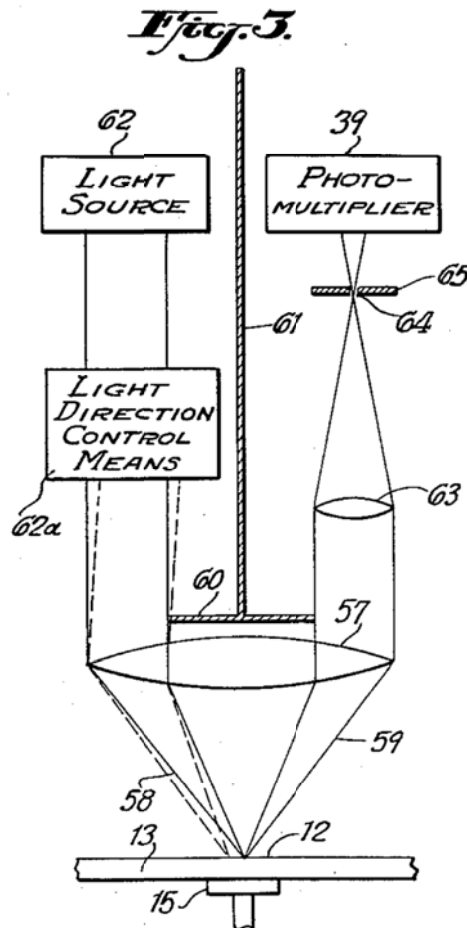
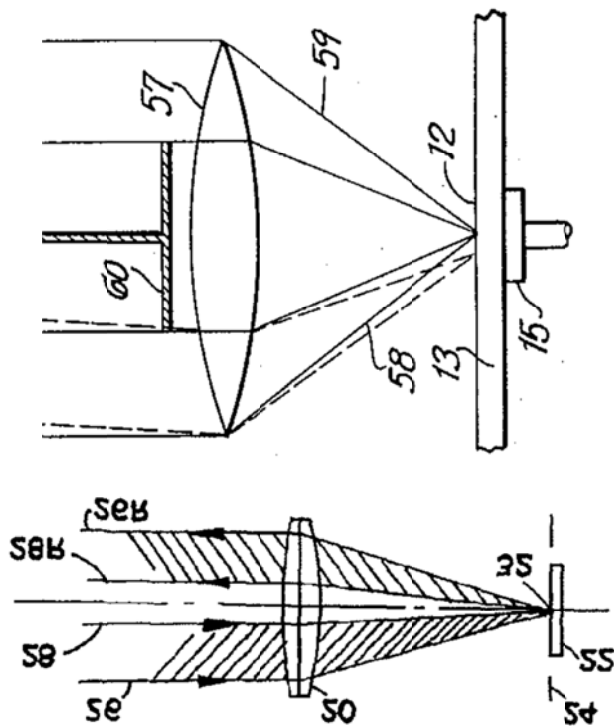


Figure 3 is a combined schematic and block diagram which illustrates a modified form of the embodiment illustrated in Figure 2.

Petitioner asserts that “light source 62 is collimated and focused to a point by lens 57, and that the surface 12 is placed at the focus point of the light. Therefore, surface 12 is located in the focal plane of the lens 57.” Pet. 24. Petitioner argues that this embodiment exhibits retroreflection because the same lens 57 is used to irradiate the surface of object 12 and to capture light reflected from its surface. Pet. 30. Petitioner demonstrates this by

providing juxtaposed figures (Pet. 25) as follows:



The juxtaposed figures above include, on top, a portion of Bailey's Figure 3 is rotated by 90 degrees and, on the bottom, Figure 1 of the '913 patent. Thus, the juxtaposed figures both show incident light rays moving left to right, focusing on a target and being reflected right to left.

Petitioner argues that in the Bailey's Figure 3 embodiment reflected light is focused on photomultiplier 39 through slit 64. Further, photomultiplier 39 generates an output electrical signal related to the reflected light. This signal is used to determine a characteristic of the reflector — roughness of its surface. Pet. 31. Petitioner provides a detailed read of claims 48-53 on Bailey using claim charts. Pet. 26-38.

Patent Owner argues that Bailey does not anticipate claims 48-50. Prelim. Resp. 1. In particular, Patent Owner argues that Bailey doesn't disclose retroreflective characteristics. According to Patent Owner,

Petitioner relies only on the Bailey's Figure 3 drawing as demonstrating incident and reflected light rays and a supposed focal point on object 12 . There is no text in Bailey that explicitly states that retroreflection is taking place. Nor is there any text in Bailey that states that object 12 is located at a focal point of Bailey's lens 57. Petitioner relies solely on Bailey's Figure 3 schematic diagram. Prelim. Resp. 27–28.

Based on our review of Bailey's specification, and our construction of the claim terms "retroreflected" and "retroreflection," we agree with Patent Owner. Contrary to Petitioner's assertions, Bailey does not describe Figure 3 as exhibiting retroreflected radiant energy or retroreflection. Nor does Bailey explain that object 12 is at the focal point of lens 57, or that the reflection of an incident ray is in a manner such that the reflected ray is parallel to the incident ray for any angle of incidence. Further, Petitioner has not identified in Bailey a description that its Figure 2 embodiment generates a collimated beam of light. See Prelim. Resp. 32. Moreover, although we recognize the apparent expertise of Dr. Hesselink (see Ex. 1008 ¶¶ 2–4), we note that his testimony regarding retroreflection relies only upon assumptions made with respect to Bailey's Figure 3 (see *id.* ¶ 33). As Patent Owner correctly notes, it is insufficient to rely on a schematic diagram alone to define precise proportions of elements shown in such a diagram. *Id.* ¶¶ 32–33 (citing *Hockerson-Halberstadt, Inc. v. Avia Group Int'l*, 222 F.3d 951, 956 (Fed. Cir. 2000)). For these reasons, we determine that Petitioner has not established that radiant energy is retroreflected in Bailey.

Patent Owner argues additionally that Bailey doesn't receive retroreflected light with an optical gain. Prelim. Resp. 30–33. Because we are not persuaded that retroreflection is taking place in Bailey, we likewise

are not convinced that light reflected from the surface of object 12 is received with an optical gain.

Consequently, based on the information presented, Petitioner has not established sufficiently that Bailey discloses every limitation of independent claims 48 and 51. Therefore, on this record, we determine that Petitioner has not set forth a reasonable likelihood of prevailing in establishing that independent claims 48 and 51, or their respective dependent claims 49, 50, 52, and 53 are anticipated by Bailey.

IV. CONCLUSION

For the foregoing reasons, we conclude that based on the information presented in the Petition, Petitioner has not established a reasonable likelihood of prevailing in showing that any claim of the '913 patent is unpatentable based upon the asserted anticipation ground.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is *denied* as to claims 48–53 of the '913 patent under 35 U.S.C. § 102(b) as anticipated by Bailey; and

FURTHER ORDERED that no *inter partes* review is instituted.

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